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## Equipment Needed

1. Tables, a sink, and running water.
2. A set of household scales, if possible.
3. Suitable containers or packaging materials and a wide-mouthed funnel for filling packages.
4. Pans, stainless knives, cutting boards, measuring cups, large spoons, and ladles.
5. Paraffin, cold-storage tape, or other material for sealing containers; a flatiron or curling iron for heat-sealing; tags or crayons for labeling; and a notebook for records.
6. FOR FRUIT: Colander or wire-screen sieve for washing fruit. Enamel, earthenware, or other noncorroding containers for washing and holding prepared fruit. Containers for mixing fruit with sugar or making sirup. Noncorroding screen sieve or special conical fruit sieve for pressing fruit into a smooth pulp, or puree.
7. FOR VEGETABLES: A good stove. Enamel or aluminum kettles with lids, for blanching; large kettles or a handy sink for cooling blanched vegetables; a fine-mesh wire basket, with a cover and handles, for lowering the food into the blanching kettle and the cooling water; a screen or cloth drain for the cooled vegetables. A clock with a second hand to time the blanching period.

This pamphlet is a revision of and supersedes AWI-63, Preparing Home-Grown Vegetables and Fruits for Freezing.

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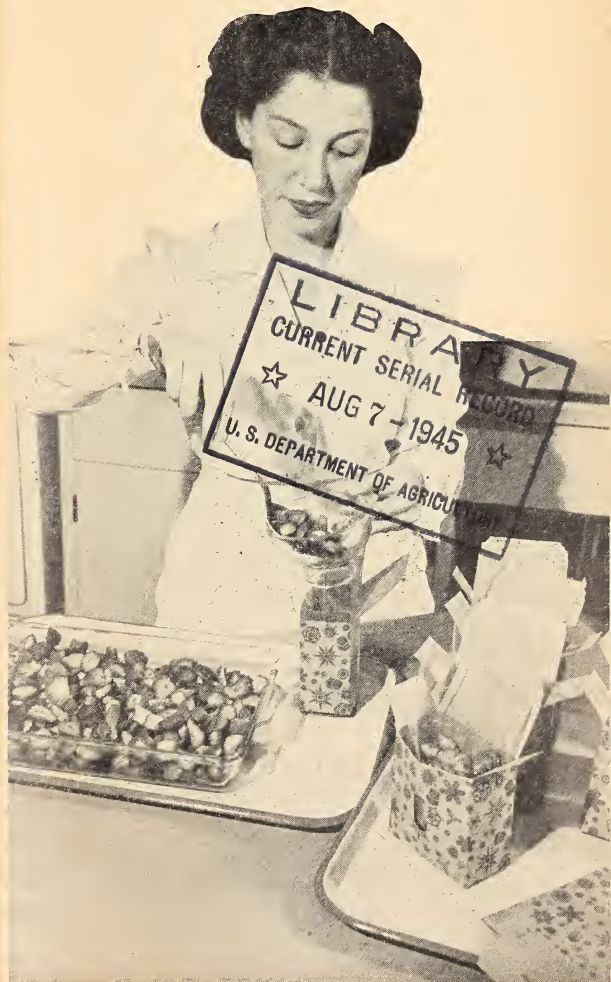
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# How to Prepare Vegetables and Fruits for FREEZING



AWI-100

## Emergency Wrappings

A satisfactory bag can be made by heat-sealing the edges of folded cellophane or double-waxed paper. A strip 7 by 21 inches can be folded to make a 6- by 10-inch bag with half-inch seams along each side and a 1-inch flap at the top. Cellophane bags should be enclosed in pasteboard cartons or covered with stockinet material to prevent puncturing during storage.

A partially vapor-resistant covering for cans or jars is made by dipping clean muslin in melted paraffin. Dip the cloth, spread it flat, and let the paraffin harden. Then cut the material into squares large enough to fit over the top and well down the sides of the can or jar. Warm the square slightly, press it down closely over the top of the filled container, and tie it tightly with string. Such covers must be handled carefully or the wax will crack. Emergency wrapping should not be used for storage more than 8 weeks.

## Glazing

Another home-made "wrap" for frozen food is a cover of ice. Freeze vegetables or fruits to 0° F. in a can or carton with straight sides, warm just enough to slip the food out in a block, refreeze, then dip the block quickly in water chilled to just above the freezing point. A thin film of ice will form over the food. Dip several times until the ice covering, or glaze, is one-sixteenth to one-eighth inch thick. Wrap the food in paper to protect the glaze, which should last for 3 to 6 months. It may have to be renewed if the food is to be kept longer.

## Packing and Sealing

### Sugar or Sirup for Fruits

Packing fruits in sugar or sugar sirup helps greatly in maintaining the color, texture, and flavor during and after defrosting.

In packing fruit with sugar, 3 to 5 parts of fruit (by weight) to 1 part of sugar, mixed evenly, is right for most fruits. See table for exact proportions.

If you do not have scales, estimate weights on the basis that tightly packed fruit weighs about as much as an equal volume of sugar. A 4-to-1 pack, therefore, would mean 4 cups of tightly packed fruit to 1 cup of sugar.

Make sugar sirup by stirring sugar into an equal quantity, by measure, of cold water until the sugar dissolves. Other proportions of sugar and water are sometimes better for certain products. (See the table.)

Dry sugar draws some moisture from fruit and may shrink it, but this is seldom important, especially if the fruit is to be cooked. Fruits keep their size and

shape better in sirup than in dry sugar and are easier to pack.

### Freezing Fruit Without Sugar

Boysenberries, youngberries, and raspberries are better packed without sugar or sirup. They can be defrosted at ordinary room temperature either dry or in cold sirup. Most other fruits maintain higher quality if packed with sugar or sirup.

### Preventing Discoloration of Fruits

Light-colored tree fruits have a tendency to turn dark when peeled or cut and exposed to the air. To protect apple slices from discoloring, dip them in boiling water or light sirup, or steam them, as recommended in the table. Apricots, nectarines, and peaches that have been peeled and cut or sliced can be treated in citric acid solution or in sirup. The citric acid solution is made by adding  $\frac{1}{4}$  teaspoon of citric acid to 1 quart of water. The fruit is left in the solution for 1 minute before packaging. If sirup is used, make it by adding  $\frac{3}{4}$  of a cup of sugar to each cup of water. Slice the fruit directly into the sirup which is used for packing.

### Crushed or Pured Fruit

Frozen crushed fruit makes an excellent flavor base for ice cream, sherbets, and fruit drinks. It may be used in shortcakes and cobblers or as a sauce for ice cream. The natural flavor is very pronounced in crushed or pured (pulped) fruit.

Fruit can be crushed with a wire potato masher or a fork or in a food chopper. A tinned sieve or a fruit press can be used for making skinless, seedless purees. Galvanized or copper screen should not be used. Stir sugar in carefully to avoid beating in air.

Best results are obtained by sealing in glass jars or tin cans to preserve fresh fruit flavor. (Use R-enamel cans, which are resistant to fruit acids, for red or dark purees.)

To make crushed fruit more attractive for shortcakes or sauce, mix a few whole berries or slices of larger fruit with the crushed material.

### Packing Vegetables in Brine

For extra protection against drying, you may pack some vegetables in a weak salt solution. Make brine by adding one-half to one teaspoon of salt, according to taste, to each cup of water. Pack the vegetables to within one inch of the top of the container, cover them with the cold brine, and freeze. Before cooking it is best to defrost the brine.

### Filling the Containers

Pack the prepared vegetables and fruits firmly into the containers. For a dry pack leave about half an inch of space at the top. For brine or sirup packs or



for purees or crushed fruits leave about one inch of head space. If you use wrappings instead of containers, put enough food in each package to serve your family for one or two meals.

Use a funnel to fill packages that are to be heat-sealed, so that no food will touch the edges.

### Heat Sealing

A warm flatiron or curling iron seals the edges and seams of cellophane and waxed-paper packages. Use just enough heat and pressure to melt the cellophane or wax and stick the edges together tightly. Too much heat may scorch the material and spoil the seal.

### Label Packages Plainly

Mark each package or container to show the kind of product and date of storage, and, in community lockers, your locker number. Special stamps, inks, and pencils are made for labeling packages of frozen food. Or strips of cold-storage tape with the information written on in lead pencil may be pasted on the package. A simple and convenient label is a tag tied on with a string.

You may want to use wrappings or tape of different colors to identify different kinds of products, as red for meat, green for certain vegetables, blue for berries, and so on. Or colors may be used to indicate dates of storage, so that foods that have been stored longest may be used first.

### Freezing

Foods should be frozen as soon as possible after packaging. If delay in getting them to the locker is unavoidable, they may be held in the home refrigerator for a few hours.

Rapid freezing is desirable. The speed of freezing depends on the temperature in the freezer, whether the food is in contact with the cooling units, the circulation of air, the thickness of the wrappings, and the size of the packages. Packages of medium size spread out on the cooling coils or plates in a rapid air stream will freeze in 6 to 8 hours or even less at 10° below zero. Satisfactory freezing is possible at 0° F. if the packages are spread out so that air can move freely around them. A higher temperature than this is not recommended for either freezing or storage.

### Using Frozen Products

#### Thawing

Frozen vegetables are usually cooked without being thawed. If you prefer, however, they can be thawed in the package at room temperature or in water.

It takes 3 to 4 hours to thaw a one-pound package of frozen food in 75° F. air. To thaw more quickly, immerse the sealed package in lukewarm (90° to 100° F.) running water.

In the home refrigerator, frozen food will take 12 to 48 hours to thaw.

Fruits can be thawed by the same method as used for vegetables. Light-colored fruits such as apricots and peaches will discolor quickly when allowed to thaw exposed to the air at room temperature. Such fruits, when taken from the freezer storage, should be thawed in the sealed package until soft enough to serve. Fruits defrosted in cold sirup should be kept in it until served or cooled to prevent discoloration.

Thawed frozen foods tend to spoil quickly. They should be used or cooked promptly.

### Cooking Vegetables

Frozen vegetables cook in about half the time needed for fresh ones.

Put a small amount of lightly salted water in the saucepan or, if the vegetables were packed in brine, use part of the brine. One-quarter to one-half cup of liquid is enough. Bring the liquid to a boil, add the frozen vegetables, and when boiling starts again, cover the pan tightly. After 2 or 3 minutes, break the melting mass of food apart with a fork so the heat will reach all parts evenly, then cover again and turn down the heat so that it will keep the water boiling gently. Cooking time is measured from the time the water boils again after the food is added. In using a steamer, have the water boiling before putting the vegetables over it and measure cooking time from the moment a heavy cloud of steam rises again.

Some vegetables are better cooked in a small quantity of water and some are better steamed, but most may be cooked either way.

Proper cooking will save much of the vitamin and mineral values that have been preserved in frozen foods by careful handling. Use the cooking water or brine to get all possible food values.

### Serving Fruit

Frozen fruits are generally eaten uncooked and not quite defrosted. Serve them like fresh fruit.

Crushed fruit may be used as sauce for ice cream or in shortcake. Tree fruits frozen without sugar may be put right into the saucepan for making sauce or preserves, or they may be defrosted in cold sirup and eaten raw. The smooth texture of sugar-packed, quick-frozen fruit puree makes it delicious when served frozen without further preparation.

Leave a few ice crystals floating in frozen fruit juices to be used for drinking, but do not add ice.



# DIRECTIONS FOR PREPARING VEGETABLES AND FRUITS FOR FREEZING

Vegetable or Fruit	Preparation	Blanching	Packing	Vegetable or Fruit	Preparation	Blanching	Packing
Apples	Wash, peel, trim, core, and resection or slice. Slices may be held in weak brine until blanched or packed.	Blanch in boiling water or light sirup 1½ to 3 minutes or in live steam 2 or 3 minutes depending on thickness of slice; cool in air or cold water.	For a loose pack, dry-freeze on trays before packaging; otherwise freeze in package.	Cranberries	Sort and screen, discarding inferior berries. Wash thoroughly.		Freeze whole without sugar or sirup, or puree and pack with an equal amount of sugar.
Apricots	Sort, wash, halve, and pit. For sliced, crushed, or pureed fruit, scald 15 to 30 seconds and peel. Dip halves or slices in citric acid solution for 1 minute if practicable.		Cover fruit with chilled 40- to 50-percent sugar sirup; or mix halber thoroughly with dry sugar, 5, 4, or 3 to 1. <sup>1</sup>	Figs	Figs for freezing should be ripe than for fresh shipments. Wash and sort; cut off stems. Leave whole or peel, halve, or slice.		Pack in 35-percent sugar sirup. Freeze promptly after packaging.
Asparagus	Sort into 3 diameter groups and cut into tips (1½ inches) or stalks (6 inches). 1 to 2 inches of trimmed-off stalks may be frozen to use in soup. Wash thoroughly. Do not use iron utensils.	Blanch in boiling water—small diameter, 1½ minutes; medium, 2 minutes; large, 3 minutes. Cool in running water.	Pack with or without brine. Freeze as rapidly as possible.	Grapes	Wash and sort; discard inferior grapes.		Pack whole in 35- to 40-percent sugar sirup. Use enough sirup to keep grapes well covered during freezing and storage.
Beans, lima	Sort beans, discarding imperfect ones and segregating large white beans for separate packing. Wash in cold water.	Blanch in boiling water—small beans, 1½ minutes; large beans, 2½ minutes. Cool in running water.	Pack dry or in brine.	Mushrooms	Discard defective mushrooms. Sort into button size and larger and carefully wash in cold water.	Blanch in boiling water, button sized mushrooms or pieces, 2 minutes; larger sizes and pieces, 3 to 4 minutes. Cool in cold water.	Pack in brine.
Beans, snap	Select sound, fresh beans, wash thoroughly, snap and string if necessary, and cut or break if desired. Avoid the use of iron utensils.	Blanch in boiling water 1½ to 2 minutes. Cool in running water.	Pack with or without brine. Better texture is usually obtained with brine. Freeze as rapidly as possible.	Nectarines	Sort, wash, drain, peel, halve, and pit. May be sliced, coarsely crushed, or pureed. Dip halves or slices in citric acid solution for 1 minute if practicable.		Pack halves or slices promptly with 40-percent sirup, 35-percent sirup for very sweet fruit. Chill sirup before adding. Mix crushed fruit or puree with sugar, 3 to 1.
Beets	Cut off tops. Scald in boiling water ½ minute and cool in water quickly for easy peeling. Slice, or dice into ¼-inch cubes.	Blanch slices or cubes in boiling water 2 to 3 minutes; cool in water.	Pack without brine.	Peaches, clingstone	Select peaches picked when fully ripe. Sort, and peel by dipping in hot (180° F. to boiling) 2- to 5-percent lye solution for 45 seconds to 1½ minutes; remove fruit to cold, clean water and rub off skin with hands. Rinse in cold water. Pit and slice.		Pack and freeze without sugar or sirup.
Blackberries, dewberries, loganberries, boysenberries, and similar berries	Select plump, well-ripened berries. Sort, wash, and drain, handling carefully to avoid bruising berries.		Freeze whole berries on trays or in containers. Pack in sugar (5 or 4 to 1) for pie or jam; in sirup for dessert use. Mix crushed or pureed berries with sugar, 3 to 1.	Peaches, freestone	Select firm-ripe, richly colored fruit. Sort and peel, loosening skin by 15 to 30 seconds in boiling water. Halve and pit. Dip halves or slices in citric acid solution for 1 minute if practicable.		Cover halves or slices promptly with chilled 40- or 50-percent sugar sirup. Mix coarsely crushed or pureed fruit with sugar, 3 to 1.
Blueberries and buckberries	Select large tender-skinned berries. Sort or screen, wash, and drain.		Berries to be used in pies may be packed with sugar or sirup. Pack berries for dessert use in a 40- or 45-percent sugar sirup.	Peas	Shell ripe but not overmature peas of green-skinned, wrinkled varieties except those of Thomas Laxton type. Discard overlarge, hard, or starchy peas. Wash.	Blanch in boiling water 1 minute; cool rapidly.	Pack promptly with or without brine.
Broccoli	Select dark green, compact heads with sound stalks. Trim off large leaves and woody stems. Wash thoroughly. Split very large stems lengthwise. Sort into 3 sizes of stalks.	Blanch in boiling water—small stalks, 3 minutes; medium, 3½ minutes; large, 4 minutes. Cool in water.	Pack with or without brine.	Peppers, green and pimiento	Wash and cut into halves, quarters, or slices, removing the seeds.	Blanching not necessary, but makes packing easier. Use boiling water, 2 minutes; cool promptly.	Cover with brine.
Brussels sprouts	Select firm, compact, moderately large sprouts of bright deep-green color. Discard inferior sprouts. Wash and divide into 3 size groups.	Blanch in boiling water—small, 3 minutes; medium, 4 minutes; large, 5 minutes. Cool in water.	Pack with or without brine.	Persimmons	Sort soft-ripe, sweet fruit, wash, cut up, and pulp. Peel before pulping if desired.		Pack with sugar, 5 or 4 to 1, thoroughly mixed.
Cabbage	Select solid, green-and-white heads, discard outside and defective leaves. Cut heads into convenient-sized pieces or separate larger single leaves. Wash.	Blanch cut sections in boiling water 3 to 4 minutes, depending on size. Scald separate leaves for 1½ minutes. Cool in water.	Pack with or without brine.	Prunes and plums	Sort, wash, halve, and pit.		Pack prune halber with sugar sirup or coat with sugar; sirup pack is preferable. Puree plums with sugar in ratio of 4 or 3 to 1.
Cantaloup (Persian and similar melons)	Peel and remove seeds; dice, cut in slices or balls, or crush coarsely.		Pack balls or slices in layers between waxed paper sheets to permit separation for use without complete thawing. Mix crushed melon with sugar, 4 to 1 or 3 to 1.	Pumpkin and squash	Winter varieties: Peel, discard seeds, cut into 1-inch cubes, cook until soft, mash, and cool. Summer varieties: Slice in ½-inch pieces.	Blanch in boiling water 3 to 4 minutes; cool.	Pack without brine.
Carrots	Cut off tops and discard inferior carrots. Scrub with a stiff brush under cold running water, trim, and dice into ¼-inch cubes. Freeze whole carrots only when small, tender, and young.	Blanch diced carrots in boiling water 2½ minutes. Cool in cold water.	Pack with or without brine.	Raspberries, black	Carefully sort and screen berries to retain large, full-ripe dark ones. Do not wash unless necessary. If berries are washed, drain them thoroughly.		Pack whole berries dry; seedless puree with sugar, 3 to 1.
Cauliflower	Select heads with white, compact curd. Break up into pieces not over 1 inch thick. Wash.	Blanch in boiling water 2½ to 3½ minutes. Cool in cold water.	Pack with or without brine.	Raspberries, red, purple, or yellow	Select firm-ripe, brightly colored berries and handle with more care than other berries. Sort, but wash only if necessary and then drain thoroughly.		Pack whole berries with 40- to 50-percent sugar sirup; or with sugar, 5, 4, or 3 to 1; or dry. Freeze dry berries loose before packaging. Mix puree with sugar, 3 to 1.
Cherries, sour	Sort, wash, and drain bright-red, fairly firm, acid-flavored cherries. A short soaking in water may make pitting easier. For a flavor base, crush coarsely.		Pack whole fruit with sugar 5, 4, or 3 to 1. Pack crushed fruit or juice with sugar, 3 or 2 to 1.	Rhubarb	Wash, trim, and cut tender stalk into 1-inch pieces.	Blanch in boiling water or sirup 1½ minutes, cool in cold water.	Pack without sugar or sirup.
Cherries, sweet	Stem, sort, and wash large, firm-ripe cherries. Pitting not necessary but pits give an almondlike flavor. Pit and crush for sauce.		Pack whole cherries with sugar sirup. Pack coarsely crushed fruit or cherry juice with sugar, 3 to 1.	Soybeans, green edible	Boil for 5 minutes, cool, and squeeze the beans out of the pods. Wash and drain.	No additional blanching required.	Pack with or without brine.
Corn, sweet, whole ear	Shuck and trim ears.	Scald ears in boiling water for 2 minutes, and cool in cold water. Cut corn off cob with a sharp knife and rinse kernels quickly in cold water, skimming any chaff off surface.	Pack without brine.	Spinach and other greens	Thoroughly wash deep-green, tender greens. Remove imperfect leaves and larger, tough stems.	Blanch in boiling water for 1½ minutes. Cool promptly in cold water and drain thoroughly.	Pack without brine.
Corn on cob	Shuck and trim. Cut ears into about 3-inch lengths and separate them into 3 diameter classes.	Blanch in boiling water—small diameter, 7 minutes; medium, 9 minutes; large, 11 minutes. Cool in cold water as quickly as possible.	Wrap one or several ears in vapor-resistant paper and twist the ends or heat seal. Freeze on trays or in containers, not too many ears in one container.	Strawberries	Sort and hull. Wash and drain thoroughly. Leave berries whole, slice, or crush coarsely.		Pack whole berries with dry sugar, 3 to 1, or cover with 40- to 50-percent sugar sirup. If packed with dry sugar, mix thoroughly before packing and pack tightly. Mix sliced or crushed berries with sugar, 3 to 1.
				Turnips and rutabagas	Cut off tops, wash, and peel. Dice into ½-inch cubes.	Blanch in boiling water 2 to 3 minutes. Cool in cold water.	Pack without brine.

<sup>1</sup>5, 4, or 3 to 1 means number of parts of fruit to one of sugar, by weight.



# HOW TO PREPARE VEGETABLES AND FRUITS FOR FREEZING

Freezing is one of the best ways of keeping vegetables and fruits. They may be frozen and stored in home freezer storage cabinets or taken to a community locker plant. When properly prepared, frozen, and stored, frozen foods keep almost all their natural color, flavor, and nutritive values.

## How Freezing Preserves Foods

All fresh foods contain bacteria and other organisms that multiply and soon spoil the food at ordinary temperatures. Chemical substances called enzymes are also present in all living matter. In harvested plant materials they soon begin to impair the quality. Their action is slowed by freezing temperatures but is not stopped completely.

By checking the action of these invisible agents, freezing to 0° F. keeps foods for 6 months to more than a year in about the same condition as when they were first frozen.

## Handle and Prepare Foods Carefully

Start with fresh fruits and vegetables of high quality. Use the varieties recommended for freezing by your State agricultural college. Some local varieties good for canning are not suited for freezing. Select only vegetables and fruits that are at the peak of maturity—just table ripe—and use in other ways any that are bruised or too soft.

Freeze fruits and vegetables the day they are picked—within a few hours if you possibly can. If you have to hold them more than 1 day before freezing, keep them in a refrigerator at 32° to 40° F., or cool vegetables in ice water and pack them in cracked ice.

Wash fruits and vegetables in pure water, using clean utensils. Peel them if necessary. Handle them as little as possible, especially ripe fruits.

## Blanch Vegetables

All vegetables should be blanched (scalded in boiling water or steam for a few minutes) before freezing. This is necessary to prevent losses in flavor and quality during storage. It also preserves or brightens the color and slightly softens the products so they are easier to pack.

Blanch only a small quantity of food at a time—about one pound. Put the food in a fine-mesh wire basket with handles and lower into boiling water for the length of time given in the table. Blanching time is measured from the time the water boils again after the vegetables are put in.

For blanching in boiling water, use one gallon of water to a pound of the product; the water should

cover the food. Since the boiling point of water varies with elevation, the blanching time should be increased slightly at higher altitudes. If you live in a place that is 1,000 to 3,000 feet above sea level, add one-fourth of a minute to blanching time; 3,000 to 5,000 feet, one-half minute; 5,000 to 7,000 feet, three-fourths of a minute; 7,000 to 9,000 feet, one minute.

Dip the blanched products at once into cold water. Ice water is best, but running water at 50° to 60° F. will do. Cooling time is about the same as blanching time. The basket used for blanching is convenient for dipping vegetables in the cooling water. Drain and pack the cooled products at once.

## The Right Kind of Package Is Important

The cold air of the freezer tends to dry out foods. Excessive drying is called freezer burn. Food in the freezer must be protected from this loss of moisture by a well-made package of highly water-vapor-resistant material.

The wrapping or container should impart no flavor or odor to the food. It should be easy to handle and seal and should not take up too much storage space or cost too much.

Various materials can be used for packing frozen foods. Which one you choose will depend in part on what you have on hand or can get in the stores.

Glass jars with tops and rubber rings and tin cans with tight tops give the best protection and can be used more than once. For acid fruits, use enamel-lined or lacquer-lined cans, which are not affected by the fruit acids.

Special cellophanes are almost as good protection as cans or jars and take up less room. They can be sealed easily with a warm iron (heat-sealed). Cellophane can also be used to line paperboard cartons.

Waxed paperboard cups with tightly fitting waxed lids or waxed-paper bags give the next best protection in the freezer. They are relatively cheap and are easy to fill and to label. The bags can be heat-sealed.

Bags or containers made of other water-vapor-resistant materials, such as laminated paper, are satisfactory if properly sealed.

Special, double-waxed paper (waxed on both sides) is widely used for wrapping frozen foods. Like the waxed cups, it will not prevent drying as well as the special cellophanes do, but it is cheaper, fairly tough, and reasonably efficient for a short storage period if properly sealed.

The ordinary waxed lunch paper sold in grocery stores is not water-vapor-resistant. Therefore, it should not be used for packaging frozen food.